

## ABSTRACT

The present invention includes a respiratory monitor that improves patient safety through the use of highly responsive monitors and displays highly visible to all clinical personnel even in the absence or failure of an alarm display. The display can be positioned so that clinicians do not have to look away from the patient to view the output of the respiratory monitor. The respiratory monitoring system alerts clinicians of potential problems while automatically taking steps to gather additional information and place an integrated drug delivery system in a safe state (e.g., step down or deactivation) in addition to providing a real-time visual indicator of respiratory rate and estimated tidal volume or respiratory effort and effect. Multiple thresholds that trigger corresponding indicators such as color-coded LEDs provide a quantized display of respiratory effort and effect while also providing a certain level of redundancy. The respiratory effort and effect can also be displayed by the intensity of the LEDs. Other arrays of LEDS provide graded levels of alarms.